Goddard Space Flight Center SPI

GSFC

Planning and Tracking Team Training

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Software Process Improvement (SPI) Project

July, 2008

Purpose and Objectives

- **Purpose: To help you understand how to plan and implement training for your project**
- **Objective - After this session you should understand:**
  - **How to create team training plan**
  - **Where to look for training for your team**
  - **How to use the SPI Group's Training Tool to document and monitor your training plan**

Key Steps for Planning and Tracking Training

1. **Planning for team training**
2. **Executing the training plan**
3. **Monitoring the training progress**
4. **Reporting on training progress**

Step 1: Planning for Team Training

- Identifying the organization – roles, responsibilities, and people to fill them
- Identifying skill gaps in your organization
- Selecting appropriate training
- Documenting the training plan

Defining Project Roles and Responsibilities

- **Define specific roles and responsibilities for your team during early project planning**
  - **Review the work that needs to be performed (e.g., management, process, and technical)**
  - **Select the roles from the Roles and Responsibilities List* on the SPI Website**
  - **Add any additional roles you need**
  - **Adjust responsibilities assigned to roles so that all responsibilities (technical and process) required for your project are covered by a role**
- **Document the roles and associated responsibilities in your Product Plan**

***http://software.gsfc.nasa.gov/tools.cfm**

Assigning Roles to the People

- **Identify what person (or people) will fill each project role**
  - **… remember that a single person can fill multiple roles**
- **Matching people to roles …**
  - **Look at the skills/experience needed for each role**
  - **Look at any very specific skills you might need (e.g., not just a developer, but a C++ developer with Rational real-time experience)**
  - **Look at the skills/experience of each candidate**
  - **Make the best match possible**
  - **Iterate until all roles are filled *as well as possible***
  - **Record the results in your Staffing Tool***

***http://software.gsfc.nasa.gov/tools.cfm**

Identifying Skill Gaps

- **Now you have a staffing plan but you aren't done …**
  - **… your staff won't exactly match the skills you need**
- **You need to identify the *gaps* between the needed skills and the available skills**
- **To identify gaps …**
  - **Identify the training (or skill) that is *required*, plus any training that is *recommended* for each role**
  - **Insert information on training (or proficiency) the person in that role already has**
  - **This will show you the *gaps* in skills and knowledge**

Proficiency

- Decide up-front what "proficient" means, such as
  - Previous job experience
  - Previous project experience
  - "*n*" months of on-the-job-training
- Document the proficiency definition in the Product Plan and with a footnote in the Training Tool*

* http://software.gsfc.nasa.gov/tools.cfm

Training Tool – Starting Point

<Project> Team Training Status	Training	CMMI Overview	Process Overview	Risk Management Tool	CM/DCR Tool - e.g., MKS	Req. Mgmt. Tool	Training Records Tool	Tool Administration (All)	GFE, if applicable - e.g., ASIST	Electro-Static Discharge	Product Plan Walkthru	SQA Plan Walkthru	Schedule Walkthru
Last Updated: <date>	**Provider**	SPI	SPI	Branch/Org	Vendor	PDL or Vendor	Branch/Org	Branch/Org	GSFC	GSFC	PDL	SQE	PDL
Name	**Role**												
		Insert rows here for each member of the team. If a member has more than one role, insert a row for each role of the team below that corresponds to each role/team member row in this location to get the appropriate defaults and then type in the training requirements as applicable. Hide the rows below once the table is built. Rows should not be deleted because the if new team members are added to the table.											
Not role specific							M*						
Use these rows to get the proper formatting and default training requirements for each role. Hide these rows once the table is b													
Acquistion Manager	AM	M	M	O	O	M			O				
CM Officer	CMO	M			M			O	O				
Contracting Officer (CO)	CO	O	O										
CO Tec Representative	COTR	M	M										
Development Engineer	DE	O		O	O				M				
Development Team Lead	DTL	M	M	O	O	O					M	M	M
Hardware Engineer	HWE	O		O	O				M				
Maintenance Engineer	ME	O		O	O				M				
Line Manager	LM	O		O									
Maintenance Team Lead	MTL	M	M	M	O	M			M	M	M	M	M
Product Development Lead	PDL	M	M	M	O	M			M	M	M	M	M

Selecting Appropriate Training

- Add your specific training needs to the tool as you create your plan
  - Include “class” training for specific skills, tools, methods, etc.
    - E.g., Object-oriented methods, C++, or CVS
  - Include any of the experience-based skill training needed, such as
    - E.g., embedded real-time development, flight dynamics, or command and telemetry systems
    - Often there are no classes for these – you may need to plan for On-the-Job Training (OJT)
  - Include Process Training
    - Training in the organizational processes
    - Training in project-specific processes

Training Tool – Planning by Role

My Project Team Training Status

Last Updated: 5/20/08

Name	Role	CMMI Overview (Training) / SPI (Provider)	Process Overview / SPI	Risk Management Tool / Branch/Org	CM/DCR Tool - e.g., MKS / Vendor	Req. Mgmt. Tool / PDL or vendor	**Project Review Processes and Strategies** / **APPEL**	GFE, if applicable - e.g., ASIST / GSFC	Electro-Static Discharge / GSFC	Product Plan Walkthru / PDL	SQA Plan Walkthru / SQE	Schedule Walkthru / PDL	Requirements Walkthru / PDL
Product Development Lead	PDL	M	M	M	O	M	M	M	M	M	M	M	M
Development Engineer	DE	O		O	O		M		O	M		M	
Development Engineer	DE	O		O	O	M	M		O	M		M	M
Development Engineer	DE	O		O	O		M		O	M		M	
Test Engineer	TE	O		O	O		M		M	M		M	O
Test Engineer	TE	O		O	O		M		M	M		M	O
CM Officer	CMO	M			M			O		M		O	

Key:	
M	Mandatory
O	Optional (but recommended)
	Training not specified
M*	Mandatory for at least one person -- not specific to a particular role
6/1/07	Training completed on date indicated
PROF	Proficiency achieved - no training required

Project-specific training

Training Tool – Planning by Name

My Project Team Training Status

Last Updated: 5/20/08

Name	Role	CMMI Overview	Process Overview	Risk Management Tool	CM/DCR Tool - e.g., MKS	Req. Mgmt. Tool	Project Review Processes and Strategies	GFE, if applicable - e.g., ASIST	Electro-Static Discharge	Product Plan Walkthru	SQA Plan Walkthru	Schedule Walkthru	Requirements Walkthru
	Provider	SPI	SPI	Branch/Org	Vendor	PDL or Vendor	APPEL	GSFC	GSFC	PDL	SQE	PDL	PDL
Jane	PDL	M 11/28/07	M	M Prof	O	M Prof	M Prof	M	M Prof	M	M	M	M
Joe	DE	O		O	O		M		O	M		M	
Jack	DE	O		O	O	M	M		O	M		M	M
Jason	DE	O		O	O		M		O	M		M	
Jennie	TE	O		O	O		M		M	M		M	O
Jim	TE	O		O	O		M		M	M		M	O
Jim	CM	M 11/28/07			M 09/25/07			O		M		O	

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Each role/person combination in the plan

Individual training and proficiencies

Potential Team Training Solutions

- **Planning for class training:**
  - **What classes are available?**
  - **Do they cover what you need?**
  - **Are they available when/where you need them?**
  - **Do you have the budget for the classes/travel?**
- **Planning for on-the-job training:**
  - **Pair experienced with less-experienced people**
  - **Assign Team mentors**
  - **Have your experts give training sessions**
  - **Walk through plans and procedures, e.g., Product Plan and Configuration Management (CM) procedures, with the team**
  - **Decide up front: "How much is enough?"**

Available Sources for Training

- If you need *process training*:
  - The Engineering Discussion series offers training on
    - The organizational processes
    - Many of the tools that you may choose to use
    - Other related skills such as CM, PPQA, and Measurement and Analysis
- If you need *management or technical training*:
  - Check NASA's SATERN for related training
  - Check APPEL for related training
  - Search the web for online classes

Documenting the Plan

- **Once you have all of that figured out:**
  - **Put it in the Training Section of your Product Plan**
  - **Finish populating your Training Tool**
  - **Training costs time and money – include it in your Basis of Estimate (BOE)**
  - **If you still have gaps you can't fill – write a risk!**

Step 2: Executing the Training Plan

- Arrange for the classes … and make sure that people attend
- Assign on-line classes ... and follow up to see that classes have been taken
- Assign mentors for on-the-job training … and check on progress
- Hold walkthroughs and expert demos

Step 3: Monitoring the Training Progress

- As the training progresses:
  - Record attendance for classes
  - Record attendance for expert demos/walkthroughs
  - Record “graduation” from being mentored
- Record the status in your Training Tool
- If it’s not going according to plan – take corrective action

Training Tool - Monitoring

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Last Updated: 6/22/08	**Provider**	SPI	SPI	Branch/Org	Vendor	PDL or Vendor	APPEL	GSFC	GSFC	PDL	SQE	PDL	PDL
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Joe	DE	O	06/10/08	O	O		M		O	M		M	
Jack	DE	O	06/10/08	O	O	M 05/25/08	M		O	M		M	M
Jason	DE	O	06/10/08	O	O		M 06/05/08		O	M		M	
Jennie	TE	O	06/10/08	O	O		M		M	M		M	O
Jim	TE	O	06/10/08	O	O		M		M	M		M	O
Jim	CMO	M 11/28/07			M 09/25/07			O		M		O	

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Step 4: Reporting on Training Progress

- **Report on Training Progress in your Branch Status Reviews (BSRs):**
  - **Accomplishments**
  - **Significant events**
  - **Issues**
  - **Risks**

Training Records to Keep

- Product Plan (specifically the Training Section)
- Training Tool:
  - Initial version by roles
  - Initial version by names
  - Revisions as training is completed (get the red out!)
- Basis of Estimate (BOE) for training
- BSR slides:
  - Accomplishments connected with training
  - Issues connected with training
  - Corrective actions connected with training
  - Risks connected with training
- E-mails connected with training

Summary

- Plan for project training
  - Define project roles and responsibilities
  - Assign roles the to people
  - Identify skill gaps
  - Select appropriate training
  - Document the training plan
  - Use the Training Tool
- Execute the training plan
- Monitor the training progress
- Report on training progress

Questions?

Acronyms

- APPEL – Academy of Program/Project & Engineering Leadership
- BOE – Basis of Estimate
- BSR – Branch Status Review
- CM – Configuration Management
- CVS – Concurrent Versions System
- OJT – On-the-Job Training
- PPQA – Process and Product Quality Assurance
- SATERN – System for Administration, Training, and Educational Resources
- SPI – Software Process Improvement